CHAPTER 4
Cumulative Effects and Other Required Topics

This Chapter summarizes the findings with respect to cumulative impacts, growth-inducing impacts, significant, unavoidable environmental impacts, and significant irreversible environmental changes that could result from implementing the proposed Shasta River Watershed-wide Permitting Program (Program).

4.1 Cumulative Impacts

A cumulative impact is created when "two or more individual effects, when considered together, are considerable or compound or increase other environmental impacts." (CEQA *Guidelines*, § 15355.) The "individual effects" could be "changes resulting from a single project or a number of separate projects." (CEQA *Guidelines*, § 15355(a)) "The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely-related, past, present and reasonably foreseeable probable future projects." (CEQA *Guidelines*, § 15355(b).)

The purpose of this cumulative impacts analysis is to disclose the potential for significant cumulative impacts that could result from the Program in combination with other closely-related, past, present and reasonably foreseeable probable projects or programs.

CEQA *Guidelines*, § 15130 requires that environmental impact reports (EIR) discuss the cumulative impacts of a project or program when its incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The discussion of cumulative impacts should include:

- Either: (1) a list of past, present, and probable future projects producing related or cumulative impacts; or (2) a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact. This Draft EIR uses a listing approach;
- A discussion of the geographic scope of the area affected by the cumulative impact;
- A summary of expected environmental effects to be produced by these projects;

- An assessment of whether such effects are significant, and if they are, whether the project's contribution to such significant impacts is cumulatively considerable; and
- Reasonable, feasible options for mitigating or avoiding a project's contribution to any significant cumulative effects.

4.1.1 Approach to Analysis

As described in Chapter 1, Introduction, a primary objective of the Program is to facilitate, through voluntary participation in the Program, compliance with Fish and Game Code, § 1600 *et seq.* and/or the California Endangered Species Act (CESA) by the Shasta Valley Resource Conservation District (SVRCD), Agricultural Operators, and California Department of Water Resources (DWR) when conducting Covered Activities, many of which are ongoing, historic activities. Because the Program is a regulatory program, this Chapter examines similar past, present, and reasonably foreseeable probable future government regulatory initiatives that have affected, are presently affecting, and/or will likely affect in the future activities similar to the activities the Program covers and/or their related impacts, as described in this Draft EIR. This Chapter also examines similar past, present, and reasonably foreseeable probable future activities similar to the activities the Program covers, including restoration activities, and their related impacts regardless of whether they are subject to any regulatory initiatives.

An impact analysis follows this discussion to evaluate whether the incremental impacts of the Program and the activities it covers when added to the potential impacts of the regulatory initiatives and activities similar to the Covered Activities that could cause related impacts, as described above, will be cumulatively considerable.

4.1.2 Past, Present, and Reasonably Foreseeable Future Regulatory Initiatives

This section provides a description of the existing and reasonably foreseeable regulatory environment that could affect activities in the Program Area similar to the Covered Activities. Recent and proposed regulatory plans, policies, and programs (collectively, initiatives) include those that relate or respond to the listing of coho salmon (*Oncorhyncus kisutch*) as a threatened species under CESA and the Endangered Species Act (ESA);[1] CDFG's Lake and Streambed Alteration Program; the 1994 Northwest Forest Plan (NWFP); the Shasta River Total Maximum Daily Loads (TMDL) Action Plan; the Water Quality Control Plan for the North Coast Region (Basin Plan), and proposed amendment of the Basin Plan; Pacific Fishery Management Council's (PFMC) Salmon Fishery Management Plan; and the Klamath Fishery Management Council's (KFMC) long-term plan for the management of in-river and ocean harvest of Klamath Basin anadromous fish. These initiatives have been enacted to reduce impacts to protected species, riparian and aquatic habitats, water quality, and overall watershed health, and ultimately result in a net-benefit to these resources. In the Impact Analysis section of this Chapter, we examine

[1] Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitat, includes an overview of CESA and ESA.

whether these regulatory actions could combine with the Program's impact on the resources described in Chapters 3.1 to 3.7 in this Draft EIR to produce a cumulatively considerable impact.

Regulation of Special-Status Species

Federal Listing of Southern Oregon/Northern California Coho Salmon

The National Marine Fisheries Service (NMFS) is responsible for conducting ESA status reviews and making listing determinations for anadromous fishes on the West Coast, including Pacific salmon and steelhead. In 1997, NMFS issued a final determination that the Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) of coho salmon is a "species" under ESA, and listed coho salmon as a threatened species under ESA (Federal Register, 1997). Its threatened status was reaffirmed in 2005 (Federal Register, 2005). The ESU includes all naturally-spawning populations of coho salmon in coastal streams between Cape Blanco, Oregon, and Punta Gorda, California, as well as three artificial propagation programs: the Cole Rivers Hatchery (ODFW stock #52), Trinity River Hatchery, and Iron Gate Hatchery coho salmon hatchery programs. A federal recovery plan which provides prioritized actions for restoring coho salmon in the Klamath River basin was recently completed (NMFS, 2007).

State Listing of Coho Salmon (San Francisco to the Oregon Border)

In 2004, the California Fish and Game Commission (Commission) approved new protections for coho salmon by adding coho salmon between San Francisco and Punta Gorda (Humboldt County) to the list of endangered species under CESA, and by adding coho salmon between Punta Gorda and the Oregon border to the list of threatened species under CESA. The Commission's decision to list coho salmon under CESA concluded a lengthy process that began in August 2002, when it found that populations of coho salmon warranted new protections (CDFG, 2004a). The effective date of listing for coho salmon in the Program Area was March 30, 2005 (CDFG, 2006).

Federal Land Management Planning Related to Special-Status Species

Northwest Forest Plan

The mission of the NWFP is to adopt coordinated management direction for the lands administered by the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) and to adopt complementary approaches by other federal agencies within the range of the northern spotted owl.[2] This plan was the result of a focused federal effort to respond to timber management conflicts on old growth forests of the Pacific Northwest within the range of the northern spotted owl and other listed species. In 1993, the Forest Ecosystem Management Assessment Team (FEMAT) convened to present and analyze alternatives for ecosystem management of these old-growth forests. Within a year, FEMAT published a report that presented

[2] Eight federal agencies have developed an implementation and effectiveness monitoring program encompassing federal land managed by USFS, BLM, and the National Park Service in western Washington, Oregon, and northwest California. This program focuses on important regional scale questions about older forests, listed species (including Northern spotted owls and marbled murrelets), watershed health, federal agency relationships with Tribes, and changing socio-economic conditions in communities closely tied to federal lands. The Regional Monitoring program receives its own funding and is a separately managed interagency program.

10 forest management alternatives. Of these 10 options, former President Clinton selected Option 9 as the course of action. An Environmental Impact Statement followed based on the FEMAT report and Option 9, which resulted in the approval of the currently implemented NWFP. The NWFP covers 24.5 million acres in Oregon, Washington, and northern California that are managed by a variety of federal agencies.

In the Program Area, the NWFP applies to the Klamath National Forest (KNF) and Shasta-Trinity National Forest. The Land and Resource Management Plans (LRMP) of both National Forests reflect the requirements of the NWFP, and "…use active stewardship and participative [sic] management to provide for environmental health and community stability in a sustainable manner." Timber production within the Program Area and neighboring Scott River watershed has been on the decline over the past several decades, both in the years leading up to the approval of the NWFP and following implementation (KNF, 1993).

State and Federal Water Quality Plans and Policies

Water Quality Control Plan for the North Coast Region

As described in Chapter 3.2, Geomorphology, Hydrology and Water Quality, the North Coast Regional Water Quality Control Board (NCRWQCB) is responsible for the protection of the beneficial uses of waters within Siskiyou County. NCRWQCB uses its planning, permitting, and enforcement authorities to meet this responsibility and has adopted the Water Quality Control Plan for the North Coast Region (Basin Plan) to implement plans, policies, and provisions for water quality management. The most recent version of the adopted Basin Plan was published by NCRWQCB in September, 2006 (NCRWQCB, 2006a). The Basin Plan and relevant beneficial uses are discussed in Chapter 3.2, Geomorphology, Hydrology and Water Quality.

Stream and Wetlands System Protection Policy - Proposed Amendment to the North Coast Basin Plan

NCRWQCB and the San Francisco Bay Regional Water Quality Control Board have been working to develop an amendment to the Basin Plans for the North Coast and San Francisco Bay Regions that will protect stream and wetlands systems, including measures to protect riparian areas and floodplains. This amendment, if approved, would be known as the Stream and Wetlands System Protection Policy (Policy) which would establish new beneficial uses and water quality objectives, and include an implementation plan to protect stream and wetland systems in the North Coast and San Francisco Bay Regions.[3] The goals of the proposed Policy are:

- to achieve water quality standards and protect beneficial uses of waters of the state;
- to protect drinking water through natural water quality enhancement and protection of groundwater recharge zones;
- to restore habitat and protect aquatic species and wildlife;
- to enhance flood protection through natural functions of stream and wetlands systems;

[3] A single policy is being proposed for Basin Plan adoption to improve regulatory consistency.

- to restore the associated recreational opportunities, green spaces, and neighborhood amenities that water resources provide;
- to protect property values and community welfare by protecting natural environments;
- to encourage local watershed planning and support local oversight of water resources; and
- to improve Regional Water Board permitting and program efficiency.

The proposed Policy recognizes that it is necessary to protect and restore the physical characteristics of stream and wetlands systems-stream channels, wetlands, riparian areas, and floodplains, including their connectivity and natural hydrologic regimes, to achieve water quality standards and protect beneficial uses. The Policy, if approved, would serve as a model for the other RWQCBs and the state to protect water quality. The Policy would also promote regulatory efficiency by linking to existing relevant permit conditions and provisions in section 401 water quality certifications, timber harvesting plans (THPs), waste discharge requirements (WDR), WDR waivers, and urban runoff National Pollutant Discharge Elimination System (NPDES) permits. The Policy would also promote general efficiency by linking to RWQCBs' monitoring programs (e.g., Surface Water Ambient Monitoring Program) and grants program.

The Policy would also provide incentives for local jurisdictions to develop watershed management plans that can be used by project applicants to offset impacts to stream and wetland functions when on-site avoidance of impacts is impossible. In this way the Policy would create a vehicle for working with local jurisdictions to develop effective implementation strategies consistent with local stakeholder interests. This Policy is currently undergoing public review.

Shasta River TMDL Action Plan

The U.S. Environmental Protection Agency added the Shasta River to California's 303(d) impaired waters list in 1992 due to organic enrichment/low dissolved oxygen (DO), and in 1994 due to elevated temperatures. The beneficial uses impaired in the Shasta River watershed by high temperature and low DO are primarily those associated with the cold-water salmonid fishery (commercial and sport fishing; cold freshwater habitat; rare, threatened and endangered species; migration of aquatic organisms; spawning, reproduction, and/or early development of fish, and recreation (NCRWQCB, 2006b). Downstream uses in the Klamath River, including the Native American Cultural Use and the Subsistence Fishing use, are also considered impaired (NCRWQCB, 2006b). The *Staff Report for the Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads* was published in 2006 (NCRWQCB, 2006b) (Shasta River TMDL Action Plan). In general, this document identifies and describes causes of impairment, recommended levels for water temperature and DO, and an implementation plan.

The goal of the Shasta River TMDL Action Plan is to achieve the temperature and DO water quality objectives, and restore and protect the beneficial uses of water in the Shasta River watershed (NCRWQCB, 2006b). Specific implementation actions are necessary in order to attain the DO and temperature TMDLs, achieve DO and temperature-related water quality standards, and protect the beneficial uses of water in the Shasta River watershed. The voluntary

implementation actions of this plan are designed to encourage and build upon ongoing, proactive restoration and enhancement efforts, and to comply with the state's *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program*. Should any of the voluntary implementation actions fail to be implemented by the responsible party, or should the voluntary implementation actions prove to be inadequate, the RWQCB would take appropriate permitting and/or enforcement actions (NCRWQCB, 2006b). The implementation actions address sediment waste discharges, water temperature and vegetation by focusing on:

- Increasing riparian vegetation along the Shasta River and its tributaries as a mechanism to lower water temperatures and promote stream bank stability;
- Controlling tailwater to prevent the discharge of nutrient enriched and elevated temperature return flow to the Shasta River and its tributaries;
- Encouraging efficient water use in the Shasta River watershed to increase dedicated cold water flow in the Shasta River;
- Removing, re-engineering, or limiting construction of minor instream impoundments or other structures capable of impeding free flow of water conveyance as a mechanism to decrease oxygen demanding sources in the Shasta River;
- Bringing the discharge of Dwinnell Dam into compliance with the DO TMDL;
- Bringing the Yreka wastewater treatment facility into compliance with existing Regional Water Board Orders and compliance with the DO TMDL;
- Preventing the discharge of polluted urban and suburban runoff from entering Shasta River or its tributaries;
- Addressing activities on USFS and BLM lands;
- Addressing activities conducted as part of timber harvest activities on non-federal lands, and
- Addressing discharge from state-controlled roads.

The Plan is geared toward using ongoing efforts and existing regulatory standards and enforcement tools more effectively than in the past, using available watershed-specific information and applicable science to inform those efforts (NCRWQCB, 2006b).

Regulation of the Pacific Salmon Fishery: the Pacific Fishery Management Council and the Klamath Fishery Management Council

PFMC is one of eight regional fishery management councils established by the federal Magnuson Fishery Conservation and Management Act of 1976 for the purpose of managing fisheries three to 200 miles offshore of the U.S. coastline. PFMC is responsible for fisheries off the coasts of California, Oregon, and Washington.

Pacific coast salmon fisheries in PFMC-managed waters focus on Chinook or king salmon and coho or silver salmon. Small numbers of pink salmon are also harvested, especially in odd-numbered years. There are no directed fisheries for other salmon species such as sockeye, steelhead and chum in PFMC-managed waters.

PFMC's Salmon Fishery Management Plan (PFMC, 1999) describes the goals and methods for salmon management. Management tools such as season length, quotas, and bag limits vary depending on how many salmon are present. There are two central parts of the Plan: an annual goal for the number of spawners of the major salmon stocks ("spawner escapement goals"), and allocation of the harvest among different groups of fishers (commercial, recreational, tribal, various ports, ocean, and inland). PFMC must also comply with ESA and other federal laws.

Every year, PFMC follows a pre-season process to develop recommendations for management of the ocean fisheries. Public involvement begins in late February when reports describing the previous season and estimating salmon abundance for the coming season are released. These reports are followed by a meeting early in March to propose season options. Public hearings on these options are held in late March or early April, and the final recommendations are adopted at a meeting in April. Recommendations are implemented by NMFS on May 1 (PFMC, 2007). In 2006 and 2007, the PFMC severely limited the allowable catch of salmon off the California and Oregon coasts, in order to protect the depleted Klamath stocks. For 2008, the PFMC took the unprecedented action of completely closing the salmon fishing season off the California coast due to severely depressed Sacramento River stocks. While the intent of the restrictions is to rebuild salmon stocks, they have also had the consequence of impairing the commercial, recreational, and tribal salmon fisheries.

The Klamath Fishery Management Council. KFMC was an 11-member federal advisory committee that brought together commercial and recreational fishermen, Tribes, and state and federal agencies to work by consensus to manage harvests and ensure continued viable populations of anadromous fish in the Klamath Basin.

KFMC developed a long-term plan for the management of in-river and ocean harvest of Klamath Basin anadromous fish. Members included representatives from commercial and recreational ocean fisheries, the in-river sport fishing community, tribal fisheries, and agencies (CDFG, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Department of the Interior).

Before the Klamath Act expired in 2006, the KFMC met three times each spring to review the past year's harvest of Chinook salmon, and to review predictions of Chinook salmon ocean abundance and harvests in the upcoming year developed by their Technical Advisory Team. KFMC then made specific recommendations to the agencies that regulate the harvest of Klamath Basin fish. These agencies included PFMC, the Commission, Oregon Department of Fish and Wildlife, Yurok Tribal Fisheries, and Hoopa Tribal Fisheries. KFMC recommendations to PFMC were used to develop ocean salmon fishing seasons. PFMC then passed its recommended fishing seasons to the Department of Commerce, which has final authority in setting regulations for the ocean fishery (KFMC, 2008).

The Klamath Act expired on October 1, 2006, and was not reauthorized by Congress. The funding for the Klamath Fishery Management Council was eliminated and the charter was discontinued.

4.1.3 Activities Similar to Covered Activities

This Chapter examines similar past, present, and reasonably foreseeable probable future activities similar to the activities the Program covers, including restoration activities, and their related impacts regardless of whether they are subject to any regulatory initiatives. Such activities include those associated with agricultural operations and private development projects, among others, by individuals, CDFG, Natural Resources Conservation Service (NRCS), Department of Water Resources (DWR), SVRCD, Siskiyou County and Five Counties Salmon Conservation Program, University of California Cooperative Extension (UCCE), and U.S. Fish and Wildlife Service (USFWS). These activities are examined here because the activities the Program covers and their potential impacts are closely related to those other activities. As a result, it is possible that the incremental impact of the Program and the activities it covers in combination with the potential impacts of these other activities could be cumulatively considerable.

Projects Subject to Fish and Game Code, § 1600 *et seq.*

An entity must notify CDFG before beginning an activity that will substantially divert or obstruct the natural flow of, or substantially change or use material from the bed, channel, or bank of a river, stream, or lake, such as the Shasta River and its tributaries, are subject to the notification requirement in Fish and Game Code, § 1602. Such activities could include restoration projects to enhance coho salmon habitat. If CDFG determines that the activity described in the notification could substantially adversely affect an existing fish or wildlife resource, the entity must obtain a streambed alteration agreement (SAA) before beginning the activity. CDFG maintains a database of all notifications it has received for projects in Siskiyou County since 2002. Of the projects listed in the database, 70 occurred in the Shasta River watershed (see **Table 4-1**). Many of the projects included in Table 4-1 are representative of activities the Program covers, including those relating to ongoing routine agricultural operations and restoration projects. Table 4-1 also list projects outside the scope of the Program. These include culvert repair, bridge work, gravel extraction, timber harvest plans, and emergency repair work in the watershed.[4] Although these projects are outside the scope of the Program, they are representative of the type of projects that could occur in the future in the Program Area. Together, these projects comprise activities that will have short- and long-term impacts in the Program Area, both adverse and beneficial.

[4] Emergency work is not subject to the notification and SAA requirements in Fish and Game Code, § 1602. Instead, the entity performing the emergency work must simply notify CDFG of the work within 14 days of beginning the work. (Fish and Game Code, § 1610.) In 2006, a myriad of emergency projects were completed in response the December 2005/January 2006 flooding events. The projects included road repair, bank stabilization, channel maintenance and modifications, culvert installation, debris removal, replacement weirs for diversion ditches, and gravel berm placement throughout the watershed, specifically within Little Shasta River, Shasta River, and Parks, Dry, Willow, Yreka, Juniper, Rock Creeks. Projects without an issuance date recorded in the SAA database are marked with an asterisk in Table 4-1.

TABLE 4-1
SUMMARY OF CDFG-TRACKED ACTIVITIES IN THE BED, BANKS, AND CHANNEL OF THE SHASTA RIVER WATERSHED (2002–JUNE 2008)

Project Name	Year Initiated	Project Description	Water	Receiving Water
2002				
Parks Creek Fish Passage	*2002**	*Fish passage improvement*	*Parks Creek*	*Shasta River*
2003				
Boles Creek Restoration Project	2003	Riparian restoration, flood management, recreational access	Boles Creek	Lake Shastina
Doug Harper	2003	Culvert installation	Unnamed	Willow Creek
Nielsen and Beck Irrigation Takeouts and Road Crossings	2003	Driveway installation, irrigation takeout	Squaw Creek, Willow Creek	Unnamed, Unnamed
Hart's Diversion Improvement Project	*2003**	*Rock weir maintenance*	*Little Shasta River*	*Shasta River*
Scott/Shasta Stream Gage Installation Project	*2003**	*Stream gage installation and maintenance*	*Shasta River*	*Shasta River*
2004				
Grass Lake THP	2004	Timber Harvest Plan	Bearwallow Spring, Dairy Creek	Grass Lake
Hammond Ranch 2005	2004	Description not available	Dale Creek	Shasta River
Riprap Installation	2004	Bank stabilization	Yreka Creek	Shasta River
Shasta River Riparian Area Cattle Exclusion Fence	2004	Riparian fencing	Shasta River	Klamath River
Precidio Bank Stabilization	*2004**	*Bank stabilization*	*Yreka Creek*	*Shasta River*
2005				
McLean Power Extension - w.o. # 2519911	2005	Culvert installation, driveway access	Unnamed	Shasta River
Shasta River Watershed	*2005**	*Proposed Project*	*Little Shasta River, Parks Creek, Shasta River, Yreka Creek*	*Klamath River*
Programmatic Authorization for Caltrans' Routine Maintenance and Repair Activities Related to Aquatic/Riparian Resources, Districts 1, 2, and 4.	*2005**	*General routine maintenance and repair at existing Caltrans facilities.*		
2006				
Edson-Foulke Fish Screen	2006	Fish screen and bypass pipe installation	Parks Creek	Shasta River
Mole-Richardson Farms Fish Screens, Head Gates and Boxes	2006	Fish screen, headgate, and measuring box installation on 6 diversion; Related restoration	Parks Creek	Shasta River

TABLE 4-1 (continued)
SUMMARY OF CDFG-TRACKED ACTIVITIES IN THE BED, BANKS AND CHANNEL OF THE SHASTA RIVER WATERSHED (2002–JUNE 2008)

Project Name	Year Initiated	Project Description	Water	Receiving Water
2006 (cont.)				
2006 Storm Damage Restoration Bacigalupi	*2006**	*Diversion replacement, debris removal, stream bank restoration, cow crossing and stock water pump improvements*	*Little Shasta River*	*Shasta River*
Burke Mills	*2006**	*Temporary culvert and reestablish rock ford*	*Little Shasta River*	*Klamath River*
Central Oregon and Pacific Railroad	*2006**	*Channel realignment, gravel bar removal*	*Shasta River*	*Unnamed*
Fish and Game Emergency work on Parks Creek	*2006**	*Fish passage improvements*	*Parks Creek*	*Shasta River*
Gregerson Emergency repair to road	*2006**	*Culvert installation*	*Unnamed*	*Willow Creek*
John B. Foster on Yreka Creek	*2006**	*Riparian restoration, flood management*	*Yreka Creek*	*Shasta River*
Kennedy Flood Damage Repair	*2006**	*House removal; soil replacement*	*Juniper Creek*	*Yreka Creek*
Little Shasta River Diversion #457 Emergency	*2006**	*Headgate and weir repairs*	*Little Shasta River*	*Shasta River*
Little Shasta River Emergency Project Flood 05/06	*2006**	*Debris removal*	*Little Shasta River*	*Shasta River*
Love Lace on Juliet Creek, Shasta River Emergency Project	*2006**	*Debris removal*	*Julien Creek*	*Shasta River*
Melvin Crawford Debris Removal	*2006**	*Woody debris and gravel removal, culvert maintenance*	*Unnamed*	*Klamath River*
Miller on Yreka Creek Emergency Riprap Project	*2006**	*Bank stabilization, wall rebuilding*	*Yreka Creek*	*Shasta River*
Moody on Yreka Creek Emergency Debris/Gravel Removal	*2006**	*Debris removal, stream maintenance*	*Yreka Creek*	*Shasta River*
Mountain Meadows Residential Subdivision	*2006**	*Box culvert installation, road fill, fencing*	*Unnamed*	*Boles Creek*
Rizzo Real Estate Emergency Rip rap	*2006**	*Bank stabilization*	*Yreka Creek*	*Shasta River*
Shasta River Water Association Sediment Removal 2007	*2006**	*Sediment removal*	*Shasta River*	*Klamath River*
South Weed Infrastructure	*2006**	*Stream crossing, sewer line installation*	*Black Butte Spring*	*Boles Creek*
Watton Place Emergency Work	*2006**	*Debris removal*	*Julien Creek*	*Shasta River*
Weston Emergency Work	*2006**	*Bank stabilization*	*Juniper Creek*	*Yreka Creek*
Wiiaka Trailer Park on Yreka Creek Bank stabilization Emergency Project	*2006**	*Debris removal, channel maintenance, bank stabilization*	*Yreka Creek*	*Shasta River*
Yreka/Weed Transmission Upgrade Project	*2006**	*Installation of transmission poles*	*Unnamed*	*Shasta River*

TABLE 4-1 (continued)
SUMMARY OF CDFG-TRACKED ACTIVITIES IN THE BED, BANKS AND CHANNEL OF THE SHASTA RIVER WATERSHED (2002–JUNE2008)

Project Name	Year Initiated	Project Description	Water	Receiving Water
2007				
Miner Street East Wall Project	*2007**	*Channel maintenance, flood control, bank stabilization*	*Yreka Creek*	*Klamath River*
Well Storage Tank Julien Creek	2007	Install a new well water storage tank and replace most of the existing water transmission main for the town of Grenada	Julien Creek	Shasta River
Miner Street East Wall Project	2007	Includes sand bagging creek for a distance of approx 90' drying out area and then dumping in high strength rapid set concrete. Retaining wall has been drilled to allow moisture to escape from behind the wall.	Yreka Creek	Klamath River
Hawk Residence Driveway	2007	Culvert across 'irrigation' ditch	Unnamed	Spring Creek
Hawk Residence Driveway	2007	Install a 15" culvert to build a driveway access to a house site	Unnamed	Spring Creek
Mole Richardson Farms Shasta River Irrigation Takeout	2007	Remove sand and silt just ahead of our take out pipe from Shasta River; work will be done with excavator.	Shasta River	Pacific Ocean
South Weed Infrastructure - Mary's Drive Improvement Project	2007	The project consists of widening Black Butte Drive, Kellogg Drive, and Mary's Drive in the City of Weed; reconstruction of an existing roadside ditch.	Unnamed	Boles Creek
Yreka Creek Floodplain Restoration Plan	2007	Fill removal and floodplain restoration along Yreka Creek	Yreka Creek	Shasta River
City of Yreka Floodwater Detention Basin Project	2007	Implement several of the storm drainage improvements recommended in the City of Yreka Master Plan of Drainage.	Little Humbug Creek | Unnamed	Yreka Creek | Yreka Creek
Greenhorn Reservoir Dredging Project	2007	Remove approximately 40000 c y of sediment and underlying dredger tailing substrate material from Greenhorn Reservoir	Greenhorn Reservoir	Greenhorn Creek
Greenhorn Creek Floodplain Restoration Project	2007		Greenhorn Creek	Yreka Creek
Houston Creek	2007			
Araujo Fish Passage and Water Quality Improvements	2007	New set of pumps, inlet structure, and a fish screen will be installed	Shasta River	Klamath River
Shasta River Water Association Fish Passage and Water Quality Improvements Project	2007	New set of pumps, intake structure and a fish screen will be installed at the existing intake	Shasta River	Klamath River

TABLE 4-1 (continued)
SUMMARY OF CDFG-TRACKED ACTIVITIES IN THE BED, BANKS AND CHANNEL OF THE SHASTA RIVER WATERSHED (2002–JUNE 2008)

Project Name	Year Initiated	Project Description	Water	Receiving Water
2007 (cont.)				
Kennedy Project Filter Cloth under rip rap	2007		Juniper Creek	Yreka Creek
Black Butte Creek Wetlands Restoration	2007		Black Butte Lake	Boles Creek
Nelson Fence	2007	Watering access lanes.	Shasta River	Klamath River
Yreka Ditch Fish Ladder	2007	Fish ladder installed. A low flow control structure will also be installed near the diversion to control pool depth and to ensure a minimum of 0.65 cubic feet per second passage bypass flow be maintained through the fish ladder added to the EFYD diversion dam.	Shasta River	Lake Shastina
Montague Culverts	2007		Shasta River	Unnamed
Yreka Creek Storm Drains Upgrade Project	2007	Replacing existing storm drains located in Yreka Street. Upgrading storm drain line pipe size from 24-30 inches to 48-60 inches. Boulders will be replaced as well	Yreka Creek	Shasta River
Marion Ranch Riparian Fencing Project	2007	Cattle watering access lanes	Shasta River	Klamath River
Munn Property Pond	2007	Pond to be dug in an existing ravine swale that a nearby irrigation ditch has overflowed into and made a secondary ditch. Culvert to be 2-3' in diameter.	Unnamed	Unnamed
Black Butte Springs Creek Restoration Project	2007	Six to eight non mechanically manipulated pools as natural weirs.	Unnamed	Unnamed
Yreka Weed Transmission Line Upgrade Project (non jurisdictional)	2007	Upgrade existing transmission lines. Construction may require crossing some agricultural ditches.	Beaughton Creek	Shasta River
Shasta River Diversion Improvements and Fish Screen Installation	2007		Shasta River 60-000 Dam	Klamath River
Bumblebee	2007	Timber Harvest Plan		
Shastina Rock and Aggregates, Lp	2007	New quarry to be built over Ephemeral blue line stream bed. No water or signs of flow are evidenced, railroad fill totally blocks stream channel above with no culverts in place	Unnamed	Beaughton Creek
Fiock Manley Pipeline	2007	Irrigation Pipeline	Unnamed	Shasta River

TABLE 4-1 (continued)
SUMMARY OF CDFG-TRACKED ACTIVITIES IN THE BED, BANKS AND CHANNEL OF THE SHASTA RIVER WATERSHED (2002–JUNE2008)

Project Name	Year Initiated	Project Description	Water	Receiving Water
2007 (cont.)				
Quarry Berm Slope Protection	2008	Rip rap will be rock 1-3' in diameter and mechanically placed with backhoes or excavator with thumb to grab rock and lock into place. Rock vane located approx 30' upstream from eroded area and 8-10' long and taper from 1-3' wide 6" bury and 2 ' high location of slope protection and rock vane shall be done on site by engineer.	Willow Creek	Shasta River
WWTP Dike Repairs	2008	Stabilize the replaced dike to prevent soil from entering Yreka Creek, create a 1.5:1 slope with stream gravel and fabric slope protection.	Yreka Creek	Shasta River
Flippen Highbanking project	2008	Water diversion	Yreka Creek	Shasta River
Mountain Meadows Residential Subdivision Project	2008	Subdivision	Ditch Creek	Boles Creek

NOTE: Projects denoted with an * indicate projects that did not have a streambed alteration agreement (SAA) issuance date noted in the database. It is assumed that these were conducted under Operational Law or as Emergency Work.
In addition to the projects detailed above, there were three additional projects that did not have the year of initiation identified. The projects were as follows:

Culvert installation/maintenance: 1 project Gravel removal: 1 projects Fisheries – related: 1 project

SOURCE: CDFG, 2008

While it is not possible to predict the exact number and types of projects in or near the Shasta River, its tributaries, and other rivers, streams, and lakes in the Program Area that will be subject to Fish and Game Code, § 1602, it is reasonably foreseeable that such projects will continue to occur in the future, and that the entities responsible for those projects will notify CDFG in accordance with the requirements in Fish and Game Code, § 1602, or in the case of emergency projects, Fish and Game Code, § 1610 (see footnote 4).

As mentioned above and described elsewhere in this Draft EIR, the Covered Activities include coho salmon restoration projects. To evaluate cumulative impacts that relate to those projects, a discussion of past, present, and reasonably foreseeable restoration projects are discussed below.

The list below includes most of the agency and non-profit programs that conduct and/or funded restoration activities in the Shasta River watershed.

- Bureau of Reclamation (BOR)– Klamath Watershed Restoration Program
- CDFG Fisheries Restoration Grant Program
- CDFG Klamath River Restoration Grant Program
- NRCS Water Quality and River Restoration Program
- National Oceanic and Atmospheric Administration (NOAA) Community Based Restoration Grant Program
- NMFS Southwest Region Arcata Office
- Siskiyou County Department of Public Works and Five Counties Salmonid Conservation Program
- Shasta Valley Resource Conservation District
- Shasta Valley Coordinated Resources Management and Planning Committee (Shasta Valley CRMP)
- USFWS Klamath Restoration Program

All of these entities have funded or conducted instream, riparian, and other related projects subject to the notification requirements in Fish and Game Code, § 1602. These restoration and fish passage, habitat, and water quality improvement projects are representative of the variety of activities that have occurred throughout the watershed within the past five years. They also represent the types of projects that will continue to be funded and implemented in the watershed. For the purpose of this section, past projects are defined as instream, riparian, and other related activities that were initiated between 2002 and 2005. New projects are defined as instream, riparian, and other related activities that were funded in 2006 and 2007. Projects funded in 2006 were typically implemented in 2007. Projects funded in 2007 will be implemented in 2008 and beyond.

Restoration and Enhancement-Related Projects Implemented in the Shasta River Watershed

CDFG Fisheries Restoration Grant Program

CDFG administers the Fisheries Restoration Grant Program (FRGP) for watershed restoration projects within the coastal watersheds of California. The focus of FRGP is to restore anadromous salmonid habitat with the goal of ensuring the survival and protection of coho salmon, steelhead trout, Chinook salmon, and cutthroat trout in coastal watersheds of California. Since 1981, there has been a collaborative effort with more than 600 stakeholders to restore declining salmon and steelhead trout habitat. Over the last 24 years, FRGP has invested over $170 million and supported approximately 2,600 salmonid restoration projects throughout the state's coastal watersheds.

Projects range from education and instream barrier removal, to riparian restoration and project monitoring. These projects are consistent with the Steelhead Restoration and Management Plan for California and the Recovery Strategy for California Coho Salmon. The success of these projects has contributed to an evolving program that directly benefits threatened and endangered anadromous salmonids in coastal California. Local partners in the Shasta River watershed have received many FRGP grants since the Program's inception. Since 2001, CDFG has funded 22 instream and upslope projects (**Table 4-2**).

Table 4-2 is organized by the year that projects were funded. To clarify, projects are typically funded in one year and implemented the following year. Hence, projects funded in fiscal year (FY) 2006/2007 were implemented in 2007 and beyond, and projects funded in FY 2007/008 are being implemented in 2008 and beyond. For that reason, Table 4-2 includes past and present projects.

It is reasonably foreseeable that CDFG will continue to fund fisheries restoration projects in the Shasta River watershed in the future, but it is difficult to project funding levels or funding priorities for FRGP. Future funding is determined during the annual budget process. For FY2007/2008, FRGP received $7.8 million from NOAA, and $8.5 million in state funding came from the General Fund, Wildlife Conservation Board, and Proposition 84 allocations. In FY2008/09, CDFG will likely receive $10.9 million in Proposition 84 funds (according to the May 2008 revision of the Governor's budget), and $9.5 million from NOAA (Flosi, 2008).

CDFG Klamath River Restoration Grant Program

In FY 2006/2007, CDFG received a one-time budget augmentation to fund the Klamath River Restoration Grant Program (KRGP). This program funds projects that have immediate benefits for salmon and steelhead. The emphasis was on projects to remove permanent or seasonal migration barriers in otherwise functioning historical salmon and steelhead streams. CDFG has directed funds for projects that provide fish passage, including removal of flashboard dams and screening of diversions (**Table 4-3**). All projects funded in the Shasta River watershed are being implemented by the project applicant. Similar to FRGP, all projects that were funded in 2006 have been disbursed for project implementation in 2007. Depending on the nature of the project,

TABLE 4-2
CDFG-FUNDED FISHERIES RESTORATION GRANT PROGRAM
INSTREAM AND UPSLOPE PROJECTS IN THE SHASTA RIVER WATERSHED (2001–2007)

Project Name	Stream Location	Project Type
2001		
Kuck Ranch Riparian Livestock Exclusion Fence Project	Shasta River	Riparian Restoration
Cowley Ranch Riparian Livestock Exclusion Fence Project	Little Shasta River	Riparian Restoration
Rice Ranch Riparian Livestock Exclusion Fence Project	Shasta River	Riparian Restoration
2002		
Beck Irrigation Tailwater Capture Project	Shasta River	Tailwater Management
RY Ranch Tail Water Management #5	Shasta River	Tailwater Management
Shasta River CRMP Tree Wrapping for Beaver Control Proposal	Shasta River	Riparian Restoration
Shasta River Riparian Cattle Exclusion Fence	Shasta River	Riparian Restoration
Meamber Tailwater Project	Oregon Slough	Tailwater Management
Hart Ranch Exclusion Fence	Little Shasta River	Riparian Restoration
2003		
Kuck Ranch Riparian Tree Planting	Shasta River	Riparian Restoration
2005		
Jim Rice Riparian Planting	Shasta River	Riparian Restoration
Joe Rice Ranch Exclusion Fence & Planting Project	Shasta River	Riparian Restoration
Nelson Livestock Exclusion Fence	Shasta River	Riparian Restoration
Shasta Water Association Dam Removal & Water Efficiency Measures Construction Engineering	Shasta River	Watershed Evaluation, Assessment, and Planning
Root Ranch Riparian Fence	Shasta River	Riparian Restoration
Marion Ranch Riparian Fencing	Shasta River	Riparian Restoration
2006		
Edson-Foulke Fish Screen	Parks Creek	Fish Screening of Diversions
Joe Rice Fish Screen	Shasta River	Fish Screening of Diversions
Oregon Slough Meamber Riparian Planting	Oregon Slough	Riparian Restoration
Ekstrom Fish Screen	Shasta River	Fish Screening of Diversions
Beck Livestock Exclusion Fence	Shasta River	Riparian Restoration
2007		
Little Shasta Fish Passage and Screening Project	Little Shasta River	Fish Screen and Passage

SOURCE: CDFG, 2007

TABLE 4-3
CDFG KLAMATH RIVER RESTORATION GRANT PROGRAM PROJECTS
IN THE SHASTA RIVER WATERSHED (FY 2006/2007)

Project Name	Project Type	Location
Shasta River Fish Passage Improvement	Fish Passage	Shasta River
Parks Creek Fish Screen Project	Fish Screen	Parks Creek
Little Shasta Fish Screen Project	Fish Screen	Little Shasta River
Araujo Fish Passage Project	Fish Passage	Shasta River
Fiock Fish Screen Upgrade	Fish Screen Maintenance	Shasta River
Micke Fish Screen Project	Fish Screen	Shasta River
Shasta River Water Association Fish Passage and Water Quality Project	Fish Passage and Water Quality	Shasta River
Parks Creek Fish Passage at I-5	Fish Passage	Parks Creek
Huseman Ditch Association Water Quality Improvement Project	Fish Screen and Water Conservation	Shasta River
Shasta River Head Gates and Measuring Weirs	Water conservation	Little Springs

SOURCE: CDFG, 2008

some projects will continue through 2008. KRGP was not reauthorized for additional funding in FY2007/2008 (Scott, 2007). Consequently, it is reasonably foreseeable that the current listed projects will be the only projects funded through KRGP. These projects will be covered by individual SAAs.

NRCS Water Quality and River Restoration Program

In addition to several other conservation programs, NRCS administers the Environmental Quality Incentives Program (EQIP) in the Program Area. EQIP provides individuals engaged in livestock and agricultural production with incentive payments and cost-share benefits to implement conservation measures on agricultural lands in the Shasta Valley. Commonly funded EQIP projects include implementation of ground and surface water conservation measures, riparian fencing, and healthy forest and fuel load projects. The highest priority is agricultural improvements will help meet water quality objectives (NRCS, 2007a).

From 2002 to the present, NRCS has allocated approximately $3.16 million to projects in the Shasta Valley primarily from two funding sources – the Klamath sub-fund and the general EQIP fund (Patterson, 2008). Klamath sub-fund projects have included improved water delivery systems (e.g., shifting from flood irrigation to pivot sprinkler systems) and improved irrigation water management (e.g., installing soil moisture sensors and providing technical assistance to use them).

The general EQIP fund has awarded a wide variety of contracts to implement grazing, open space, and wildlife habitat improvements. Most recently, general EQIP funds have been allocated to forest/fuel load management contracts in the Shasta River watershed. These contracts have been a complement to the more focused Klamath sub-fund projects (Patterson, 2007).

In addition to EQIP, Conservation Reserve Program[5] contracts are available to farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as native and non-native grasses, trees, filterstrips, and riparian buffers (Patterson, 2007). Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices (NRCS, 2007b). These activities contribute to improved water quality, habitat enhancement, and water usage efficiency.

NOAA Community-Based Restoration Program

NOAA Restoration Center has administered its Community-based Restoration Program since 1996 in order to restore NOAA trust resources and to improve the environmental quality of local communities.[6] This program uses a grassroots approach to actively engage communities in fisheries habitat restoration. In 2004, NOAA partnered with American Rivers and SVRCD to fund the Parks Creek Fish Passage Restoration project. The objective of this project was to restore fish passage for adult and juvenile salmon and steelhead to 14 miles of Parks Creek upstream of Interstate 5 where access had been limited by a low flow concrete crossing. It allowed adult fish to access extensive spawning habitat and allowed juveniles to access cold-water refugia areas in the headwaters of Parks Creek. It also enabled access to essential rearing habitat.

NOAA Restoration Center, along with CDFG, provided grant support to the SVRCD for the instream work required to remove the Shasta Water Users Association dam as part of the Shasta River Water Association Fish Passage and Water Quality Improvement Project at River Mile 17.8 of the Shasta River. In August 2008, this project removed a partial migration barrier, providing improved access to an additional 8.4 river miles of habitat for anadromous fish. Other portions of this project were made possible by funding from other contributing partners, including USFWS, NRCS, NMFS Southwest Region Arcata Office, and State Water Resources Control Board. NOAA Restoration Center and NMFS Southwest Region Arcata Office has also agreed to support the SVRCD for fish habitat and floodplain restoration along Yreka Creek within the City of Yreka on the "Yreka North Parcel" owned by the City of Yreka (Mahan, 2008). It is reasonably foreseeable that NOAA will continue to contribute additional funding for projects in the Shasta River watershed (Flickinger, 2007).

Siskiyou County Department of Public Works and Five Counties Salmonid Conservation Program

In response to the listing of coho salmon under the ESA, five counties in northern California – Siskiyou, Del Norte, Humboldt, Trinity, and Mendocino – joined together to form the Five Counties Salmonid Conservation Program (5C Program). These five counties are within the "Transboundary Evolutionarily Significant Unit (ESU)" for coho salmon (CFSP, 2007). The

5 The Conservation Reserve Program is administered through the Farm Service Agency, a partner organization of NRCS.

6 NOAA's NMFS acts on behalf of the U.S. Department of Commerce as a trustee for coastal and marine resources, including commercial and recreational fishery resources; anadromous and catadromous species; marine mammals; endangered and threatened marine species and their habitats; marshes, mangroves, seagrass beds, coral reefs, and other coastal habitats; and resources associated with National Marine Sanctuaries and National Estuarine Research Reserves.

mission of the 5C Program is to strive to protect the economic and social resources of Northwestern California by providing for the conservation and restoration of salmonid populations to healthy and sustainable levels and to base decisions on watershed rather than county boundaries. Siskiyou County Department of Public Works (DPW) is the County-liaison for the 5C Program.

As part of this joint effort, UCCE and County staff developed a "Water Quality and Stream Habitat Protection Manual for County Road Maintenance in Northwestern California Watersheds." The purpose of this manual is to provide a "user-friendly, fish-friendly" guide for County road maintenance staff as part of each county's primary mission to provide a safe and open road system for the traveling public. DPW staff has been trained to use this manual and to implement sediment control practices related to bridge maintenance, road redesign and reconstruction, as well as remediation of fish passage barriers.

The 5C Program has been a catalyst for several county-wide assessments. In 2000, an assessment of culvert fish barriers was conducted. Subsequently, the County has completed several barrier removal projects involving the replacement of culverts with bridges. Future projects of this kind are contingent on available grant money and staff time (Sumner, 2007). During the spring of 2006, DPW received authorization to initiate a Direct Inventory of Roads and Treatments (DIRT), using the 5C Program protocols, for the Scott and Salmon River watersheds. The goal of the DIRT is to identify specific sites along county roads and facilities that are contributing sediment to waterways and to develop and prioritize implementation treatments (5C Program, 2007). Using grant monies from CDFG, DPW completed an inventory of 377 miles of county-maintained roads in the Salmon and Scott River watersheds (Sumner, 2008). An inventory has not been scheduled for the Shasta River watershed at this time. If the need is validated and funds are made available via the 5C program, a DIRT inventory is reasonably foreseeable for this basin.

Shasta Valley Resource Conservation District Projects

In addition to developing the Program with CDFG, SVRCD has been conducting a variety of conservation and restoration projects over the years on public and private lands within the District by providing technical, financial, and educational support to willing landowners. In order to do so, SVRCD has sought funding from a variety of sources, including CDFG, to implement on-the-ground restoration and habitat enhancement projects.

Table 4-4 provides a summary of recently completed SVRCD activities. **Table 4-5** provides a summary of current and planned on-the-ground projects (2007-2008) (Garayalde, 2008). These tables provide a clear picture of the on-the-ground implementation work in which SVRCD has been engaged. Some of these projects overlap with projects administered by CDFG, USWFS, and NOAA.

Shasta River Coordinated Resources Management and Planning Committee

The Shasta CRMP is an informal working group of the SVRCD that works with landowners to discuss, plan, secure funding for, and carry out conservation projects on the Shasta River and its tributaries. Many projects listed in Tables 4-4 and 4-5 have Shasta River CRMP involvement.

TABLE 4-4
SVRCD PROJECT ACCOMPLISHMENTS (2002-2007)

Project Name	Project Location	Project Type	Grant Recipient/Partner
2002			
Freeman 1 Fish Screen	Shasta River	Fish screening	Freeman
Kuck Ranch Riparian Livestock Exclusion Fence Project	Shasta River	Riparian fencing	Great Northern
Little Shasta River Passage and Screen Project	Little Shasta	Fish passage, screening	Resources Mgmt
Rice Fence 2002	Shasta River	Riparian fencing	Great Northern
Tree Wrapping for Beaver Control on Shasta River	Shasta River	Riparian planting and shading	Great Northern
2003			
Beck Irrigation Tailwater Capture Project	Shasta River	Water quality improvements	SVRCD
Freeman Fish Screen 2	Shasta River	Fish screening	Freeman
Frey Tailwater	Shasta River	Water quality improvement	Resources Mgmt
Hart Little Shasta Fence 1 & 2	Little Shasta	Riparian fencing	Resources Mgmt
Kuck Bioengineered Bank Protection (Dept. Fish and Game)	Shasta River	Sediment reduction	Great Northern
Meamber Ranch Fence	Oregon Slough	Riparian fencing	Resources Mgmt
Meamber Tailwater Project	Shasta River	Water quality improvement	Great Northern
2004			
Eric Peters Fish Screen	Shasta River	Fish screening	Great Northern
Jim Rice Fence	Shasta River	Riparian fencing	Resources Mgmt
Meamber Tailwater on Oregon Slough	Oregon Slough	Water quality improvements	Resources Mgmt
Montague Clean Water Project	Oregon Slough	Water quality improvements	Resources Mgmt
Parks Creek Fish Passage	Parks Creek	Fish passage	SVRCD
Rice Planting	Shasta River	Riparian planting and shading	Resources Mgmt Management
Six Fish Screens	Klamath Basin	Fish screens	Resources Mgmt
Tube Screens	Klamath, Shasta	Fish screening	SVRCD
2005			
Kuck Planting	Shasta River	Riparian planting and shading	Resource Mgmt
Marion Fence	Shasta River	Riparian fencing	SVRCD
Nicoletti Ranch Riparian Fencing	Shasta River	Riparian fencing	SVRCD
2006			
Araujo Dam Demolition Phase I	Shasta River	Fish passage, screening water quality	SVRCD
Beck Fence	Shasta River	Riparian fencing	SVRCD
DWR Urban Parkways prop acquisition and floodplain	Yreka Creek	Water quality improvement	City of Yreka
Fish Passage at Shasta River Water Association (SRWA)	Shasta River	Fish passage, screening water quality	SVRCD
Parks Creek Screens	Parks Creek	Fish screens	SVRCD
Root Riparian Fence	Shasta River	Riparian fencing	SVRCD
SRWA Dam Demolition	Shasta River	Fish passage, screening water quality	SVRCD
SRWA Fish Passage Structure	Shasta River	Fish passage, screening water quality	SVRCD

TABLE 4-4 (Continued)
SVRCD PROJECT ACCOMPLISHMENTS (2002-2007)

Project Name	Project Location	Project Type	Grant Recipient/Partner
2007			
Araujo NRCS Project Oversight	Shasta River	Water use efficiency	SVRCD
Edson Foulke Fish Screen	Parks Creek	Fish screen	SVRCD
Ekstrom screen	Shasta River	Fish screen	Resources Mgmt
Greco Screen	Klamath River	Fish screen	SVRCD
Joe Rice Fence	Shasta River	Riparian fencing	Resources Mgmt
Klamath Special Araujo	Shasta River	Fish passage, screening	SVRCD
Micke Screen	Shasta River	Fish screen	SVRCD
Nelson Riparian Fence 2	Shasta River	Riparian fencing	SVRCD
Prop 50 Araujo	Shasta River	Fish passage, screening, water efficiency	SVRCD
Prop 50 SRWA	Shasta River	Fish passage, screening, water efficiency	SVRCD
Joe Rice screen	Shasta River	Fish screen	Resources Mgmt
Soule Little Shasta screen	Little Shasta	Fish screen	SVRCD

SOURCE: SVRCD, 2006.

Since 1986, with over $7 million in funding derived from local, state, and federal agencies, SVRCD and the Shasta River CRMP have been collaboratively involved in developing and implementing many significant and beneficial water quality projects. Common projects include, but are not limited to, riparian fencing, riparian planting, bank stabilization, habitat restoration, agricultural tailwater management, water quality and flow monitoring, fish screens and fish passage, pulsed flows, and monitoring.

U.S. Fish and Wildlife Service Klamath Restoration Program

USFWS administers the Klamath Restoration Program, which funds projects that provide fish passage improvements, fish screen repairs, habitat restoration, and community education. These projects benefit federal trust species (such as salmon, trout, and other species important to Tribal traditions), as well as recreational and commercial fisheries (USFWS, 2006). Projects are funded through three funding streams: Jobs in the Woods (JITW), Partners for Fish and Wildlife, and the Fish Passage Program. JITW program was the USFWS' contribution to the NWFP's watershed restoration activities. The Partners for Fish and Wildlife Program provides technical land financial assistance to private landowners for riparian and instream habitat restoration, and the Fish Passage Program provides funds to improve fish passage through waterways. The program continues to fund restoration projects despite the expiration of the Klamath Act as a funding source (Eastman, 2008). Projects shown in **Table 4-6** were funded in the Program Area.

TABLE 4-5
CURRENT AND REASONABLY FORESEEABLE SVRCD PROJECTS (2008)

Project Name	Project Location	Project Type	Grant Recipient/Partner
2008			
Araujo dam removal/pipelines Araujo Dam-NRCS (Wildlife Habitat Incentives Program)	Shasta River	Water use efficiency	SVRCD
Seiad screens	Seiad Creek (Klamath Trib)	Fish screens	SVRCD
Yreka Creek Floodplain Restoration Project	Yreka Creek	Water quality improvement	City of Yreka
Consolidated SRWA/Shasta Water Association dam removal/pipelines	Shasta River	Fish passage, screening, water use efficiency/habitat improvement	SVRCD
	Shasta River	Water use efficiency/Habitat improvement/Fish passage	SVRCD
Fiock Fish Screen	Shasta River	Fish screen	SVRCD
Grenada Irrigation District Fish Passage	Shasta River	Fish passage/Water Quality	SVRCD
Hotlum Fire	Big Springs	Vegetation Management	SVRCD
Little Shasta Fish Screen and Passage	Little Shasta River	Fish screen, passage	SVRCD
Rotary Trap 2008	Shasta River watershed		SVRCD/CDFG
Tailwater Reduction	Shasta River watershed	Assessment and priority projects list/demonstration projects	SVRCD
Yreka Creek Aquatic and Uplands Assessment	Yreka Creek	Water quality/habitat improvement	City of Yreka

SOURCE: SVRCD, 2008

4.1.4 Other Activities

In addition to the activities and projects described above, there are four ongoing projects that in combination with the Covered Activities could make the impacts from those activities cumulatively considerable.[7] They include: 1) the Federal Energy Regulatory Commission's (FERC) re-licensing of the Klamath Hydroelectric Project; 2) Fruit Growers Supply Company's (FGSC) preparation of a multispecies Habitat Conservation Plan (HCP); 3) recent changes to the State Watermaster Program by the State Legislature and DWR; and 4) the companion Scott River Watershed-wide Permitting Program.

7 "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future project (projects (CEQA *Guidelines*, § 15065).

TABLE 4-6
SHASTA RIVER WATERSHED PROJECTS FUNDED BY USFWS KLAMATH RESTORATION PROGRAM (2001–2008)

Project Name	Project Type	Location
2001		
Little Shasta River Fish Passage and Screening Project	Fish Passage	Little Shasta River
Shasta River Flow and Temperature Modeling Study	Habitat Protection	Shasta River
Bosch Habitat Improvement Project	Habitat Restoration	TBD- emailed Darla
2002		
Hart Cold Water Refugia Protection Fencing Project	Habitat Restoration	Little Shasta River
Frey Ranch Tailwater Capture Project	Water Efficiency and Habitat Restoration	Shasta River
RY Ranch Wetlands Project	Riparian Habitat Restoration	Shasta River
2003		
Shasta River Irrigation District Water Efficiency	Habitat Protection	Shasta River
Water Conservation Through Landowner Education on Irrigation Management	Education	Shasta River Watershed
Parks Creek Fish Passage	Fish Passage and Habitat Restoration	Parks Creek
To complete compliance for Parks Creek Fish Passage with TF funds	Riparian and Habitat Restoration	Parks Creek
2004		
Fish Passage Structure at Shasta Water Users Association Dam	Fish Passage	Shasta River
Shasta River Riparian Cattle Exclusion Fence	Jobs in the Woods	Shasta River
2005		
Araujo Dam Demobilization & Water Quality Improvement Project, Phase 1	Fish Passage and Water Quality	Shasta River
Nelson Ranch Shasta River Mainstem Refugia Area Fence	Habitat Restoration	Shasta River
Shasta Water User Association Dam Demobilization and Water Quality Improvements Project	Fish Passage and Water Quality	Shasta River
2006		
Implementation of Programmatic Permit Programs in the Shasta River Valley	Implementation	Shasta River Watershed
Fish Passage Structure at Shasta Water User Association Dam II	Fish Passage	Shasta River
Fish Screen Installation at Parks Creek	Fish Passage	Parks Creek
Greenhorn Creek Floodplain Restoration	Riparian and Habitat Restoration	Greenhorn Creek
Araujo Diversion Structure Removal Project	Fish Passage and Habitat Restoration	Shasta River
Shasta River and Wetland Fencing	Riparian and Habitat Restoration	Shasta River

TABLE 4-6 (Continued)
SHASTA RIVER WATERSHED PROJECTS FUNDED BY USFWS KLAMATH RESTORATION PROGRAM (2001–2008)

Project Name	Project Type	Location
2007		
Grenada Irrigation District Fish Passage Improvement	Fish Passage	Shasta River
Shasta River Riparian Exclusion Fencing	Habitat Restoration	Shasta River
Shasta River Riparian Exclusion Fencing	Habitat Restoration	Shasta River
Shasta River Riparian Planting	Habitat Restoration	Shasta River
Upper Shasta River Diversion Improvement and Fish Screen Installation	Fish Passage and Water Quality	Shasta River
2008		
Yreka Creek Greenway Riparian and Aquatic Habitat Enhancement Project	Riparian and Habitat Restoration	Shasta River
Edson-Foulk Fish Passage	Fish Passage	Shasta River
Parks Creek Riparian Fencing/Cattle Exclusion (Mole-Richardson	Habitat Restoration and Water Quality	Parks Creek
Nelson Ranch Shasta River Riparian Planting	Habitat and Riparian Restoration	Shasta River
Grenada Irrigation District Fish Passage Improvement Project	Fish Passage	Shasta River

NOTE: This table includes on-the-ground projects only. It does not include USFWS-funding for planning, coordination, fisheries studies nor habitat analyses. This table overlaps with projects identified in Tables 4-5 and 4-6 that were implemented by the SVRCD.

SOURCE: USFWS, 2008

FERC Relicensing of the Klamath Hydroelectric Project

FERC is currently considering PacifiCorp's application to relicense its Klamath Hydroelectric Project. PacifiCorp is a subsidiary of MidAmerican Energy Holdings Company. The Klamath Hydroelectric Project encompasses six hydropower dams in Oregon and California, including Irongate, Copco No. 1, Copco No. 2, and J.C. Boyle on the mainstem Klamath River in California, all of which block passage of anadromous fish to spawning and rearing areas in the upper Klamath Basin. Water quality problems in the Klamath River have also been implicated in the decline of the Klamath River's anadromous fish runs. The Klamath is included on California's 2002 section 303d list of impaired water bodies for nutrients, organic enrichment/low dissolved oxygen, and temperature (SWRCB, 2003). Water quality problems are associated with polluted runoff and massive changes to the natural hydrology of the Upper Klamath Basin, and with the effects of the PacifiCorp reservoirs themselves, including the growth of the blue-green algae *Microcystis aeruginosa*, which produces a toxin that is harmful to both fish and human health (Kaley, 2005). In addition, recent studies have documented significant mortality in juvenile salmon and steelhead populations in the Klamath River downstream of Irongate Dam due to infectious disease, primarily caused by the endemic parasites. In 2004, infection rates in juvenile Chinook salmon ranged from about 20 to 70 percent for *Ceratomyxa shasta* and from 40 to

96 percent for *Parvicapsula minibicornis.* In 2005, dual infection rates at or near 100 percent were observed for consecutive weeks in April, a critical period for outmigration of juvenile anadromous fishes[8] (USFWS, 2006).

Adult salmonids have also been susceptible to infectious disease in the Klamath River. As described in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitat, a major adult salmonid mortality event occurred in 2002. At least 33,000 adult salmonids died in the lower 36 miles of the Klamath River between mid- to late-September (CDFG, 2004b). Fall-run Chinook salmon were the primary species affected, but coho salmon, steelhead, and other fish species also suffered losses.

The decline of the fishery has had a severe impact on local economies dependent on the salmon runs, including the Klamath River Tribes (the Yurok, Karuk, Hoopa) and the Klamath Tribes of Oregon; commercial fishing and related enterprises on the California and Oregon coasts; and the sports fishing industry (FERC, 2007).

FERC released a Final Environmental Impact Statement (EIS) for relicensing of the Klamath Hydroelectric Project on November 16, 2007 pursuant to the National Environmental Policy Act (FERC, 2007). According to the Final EIS, the project currently has a generating capacity of 161 megawatts and generates on average 716,820 megawatt-hours of electricity annually. In the Final EIS, FERC assessed the environmental and economic effects of the project as proposed by PacifiCorp and identified the following five alternatives:

1. Continuing to operate the project with no changes or enhancements (no-action alternative);

2. Operating the project as proposed by PacifiCorp with additional or modified environmental measures (staff alternative);

3. Staff alternative with conditions filed by the Department's of the Interior and Commerce;

4. Retirement of the Iron Gate and Copco No. 1 developments with additional or modified measures for the remaining developments; and

5. Retirement of the Iron Gate, Copco No. 2, Copco No. 1, and J.C. Boyle developments, with additional or modified measures for the remaining developments.

Based on the analysis in the Final EIS, FERC staff concluded that the best alternative for the Klamath Hydroelectric Project would be to issue a new license consistent with the environmental measures specified in the Staff Alternative, but the Commission itself has not yet made a licensing decision.

[8] USFWS, in cooperation with the Hoopa, Yurok, and Karuk Tribes, is conducting ongoing studies of pathogen infection and anadromous fish health in the Klamath River.

The Klamath Settlement Group, a coalition of tribal, commercial and sports fishing, agricultural, and environmental interests, working with state, local, and federal government agencies, released for public review the "Proposed Klamath Basin Restoration Agreement" on January 15, 2008 (Klamath Settlement Group, 2008).[9,10] The agreement seeks to rebuild fisheries, sustain agricultural communities, and resolve other longstanding disputes related to the allocation of water resources in the Klamath Basin. Key provisions of the Proposed Agreement include:

- A comprehensive program to rebuild Klamath River fish populations sufficient for sustainable tribal, recreational, and commercial fisheries. Elements include actions to restore fish populations and habitats, including a program to reintroduce anadromous species in currently-blocked parts of the Basin; actions to improve fish survival by enhancing the amount of water available for fish, particularly in drier years; and other efforts to support tribes in fisheries reintroduction and restoration efforts;

- A reliable and certain allocation of water sufficient for a sustainable agricultural community and national wildlife refuges;

- A program to stabilize power costs for the Upper Basin's family farms, ranches, and for the two national wildlife refuges;

---

9 The proposed agreement lists the following as parties to the agreement:

United States
U.S. Department of Agriculture, Forest Service
U.S. Department of Commerce's National Marine Fisheries Service
U.S. Department of the Interior, including Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, and Fish and Wildlife Service

State of California
California Department of Fish and Game

State of Oregon
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Water Resources Department

Tribes
Hoopa Valley Tribe
Karuk Tribe
Klamath Tribes
Yurok Tribe

Counties
Humboldt County, California
Klamath County, Oregon
Siskiyou County, California

Parties Related to Klamath Reclamation Project
Tulelake Irrigation District
Klamath Irrigation District
Klamath Drainage District
Klamath Basin Improvement District
Ady District Improvement Company
Enterprise Irrigation District
Malin Irrigation District
Midland District Improvement Company
Pine Grove Irrigation District
Pioneer District Improvement Company
Poe Valley Improvement District
Shasta View Irrigation District
Sunnyside Irrigation District
Don Johnston & Son
Modoc Lumber Company
Bradley S. Luscombe
Randy Walthall and Inter-County Title Company
Reames Golf and Country Club
Winema Hunting Lodge, Inc.
Van Brimmer Ditch Company
Collins Products, LLC
Plevna District Improvement Company
Klamath Water Users Association
Klamath Water and Power Agency

Klamath Off-Project Water Users Association

Non-Governmental Organizations
American Rivers
California Trout
Friends of the River
Klamath Forest Alliance
National Center for Conservation Science and Policy
Northcoast Environmental Center
Northern California/Nevada Council Federation of Fly Fishers
Pacific Coast Federation of Fishermen's Associations
Salmon River Restoration Council
Trout Unlimited.

10 Federal agencies did not release the Proposed Agreement.

- A program intended to insure mitigation for counties that may be impacted by the removal of the hydroelectric facilities.

The Group is presently negotiating with PacifiCorp in an effort to reach a separate "Hydropower Agreement" that would include removal of the four lower Klamath River dams, as contemplated in the fifth Final EIS alternative. The Group sees dam removal as a necessary part of the overall effort to restore the Klamath River. As of September 2008, PacifiCorp had not signed onto either agreement, and FERC had not yet made a decision on the relicensing of the Klamath Project.

The alternatives analyzed in the Final EIS would result in varying degrees of benefit to the entire Klamath River fishery, including the Program Area. The No-Action Alternative, would result in the continued impairment of water quality and the salmonid fishery. This would affect not only the mainstem Klamath and the areas above the dams, but the entire Klamath River watershed including the Program Area. The remaining alternatives represent, in general, progressively more effective means of addressing the existing water quality, flow, and migration barrier issues affecting the Klamath fishery, with the likelihood that the greatest benefits would be realized through implementation of the last alternative, which would involve retirement and removal of the four dams.

It is premature at this time to determine which alternative will be selected by FERC. However, to be conservative in the cumulative impact analysis, it is assumed that the No-Action Alternative is implemented.

Fruit Growers Supply Company Multispecies Habitat Conservation Plan

FGSC plans to submit applications to USFWS and NMFS for ITPs authorizing potential incidental take of federal endangered and threatened species during their otherwise lawful timber harvesting activities. FGSC intends to request coverage from NMFS for potential take of coho salmon and unlisted Chinook salmon (*O. tschawytscha*) and steelhead (*O. mykiss*). FGSC also intends to request coverage from USFWS for northern spotted owl, (*Strix occidentalis caurina*) and Yreka phlox (*Phlox hirsute*), although take of listed plant species is not prohibited under ESA. Take authorization for unlisted covered species would become effective upon listing. Pursuant to ESA section 10, FGSC's ITP applications will include a multispecies HCP which will apply to approximately 154,000 acres of commercial timber land owned by FGSC in Siskiyou County. On February 22, 2008, USFWS and NMFS issued a Notice of Public Scoping and Intent to Prepare a Joint EIS (USFWS-NMFS, 2008) with comments due on or before April 7, 2008.

To comply with CESA, FGSC intends to request a Consistency Determination under Fish and Game Code, § 2080 (see Chapter 5, section 5.1.1 for information on Fish and Game Code, § 2080). FGSC also intends to request a master SAA from CDFG. CDFG has been a party to the discussions between FGSC, USFWS, and NMFS and the best management practices to protect federal and state listed species which will be incorporated into the HCP have been developed in cooperation with CDFG. CDFG intends to use the EIS as a CEQA equivalent document in accordance with Fish and Game Code, § 15221 in its consideration of the master SAA.

Changes to the State Watermaster Program

DWR established the state-wide watermaster program in 1924 to provide for general public welfare and safety after many injuries and some deaths resulted from disputes over adjudicated water rights. The main purpose of the watermaster program is to ensure water is allocated according to established water rights as determined by court adjudications or agreements by an unbiased, qualified person, thereby reducing water rights court litigation, civil lawsuits, and law enforcement workload. It also helps prevent the waste or unreasonable use of water (DWR, 2007). In 1934 many of the adjudicated water users in the Shasta Valley were placed under watermaster supervision during the irrigation season. That program continues to the present day.

Until recently, DWR charged the agricultural producers a total of $85,000 per year to cover one half of the expenses associated with the program in Siskiyou County. A tax assessment was established for water users as the method for collecting payment for these charges. Watermaster charges have historically been assessed among individual water users using a formula of 10 percent based on per capita and 90 percent based on the total water right (Krum, 2007). In the past the state has covered the other half of the total program cost which, up to FY 2003/2004, was reported at $170,000.

In 2003, the California Water Code was amended so that the General Fund no longer pays for half the cost of watermaster service. As a result, the entire cost will become the responsibility of the water users. In addition to this change, DWR has changed its cost allocation procedures, and subsequently DWR has proposed an increase of 2.5–3.5 times the existing watermaster service rate. The combination of the proposed rate increase and new payment structure could ultimately result in a five- to seven-fold cost increase for watermaster service in both the Shasta and the Scott watersheds.

For the past several years, the State Legislature and BOR have provided financial relief from these watermaster service cost increases. Most recently, the State Legislature reversed a decision to increase the tax assessment by 300–500 percent over the historic $85,000 watermaster fee. However, this decision was not permanent and does not provide any legislative guarantees that fees will remain at the current rate. Any future cost increases would apply to all water users receiving watermaster services from DWR. Many landowners feel that increased watermastering costs, in addition to increasing costs associated with environmental regulatory compliance, could present a cumulative contribution to land use change.

The Save our Shasta and Scott Valleys Coalition worked with local legislators to achieve the passage of AB1580 (Chapter 416, Statutes of 2007) which creates a joint Scott Valley and Shasta Valley Watermaster District (District). This bill gives the District the power to act as watermaster over decreed water rights instead of DWR, and gives the District the power to adopt ordinances and regulations, acquire and dispose of property, appoint employees, enter contracts, and charge fees. In February 2008, the Siskiyou County Board of Supervisors appointed the initial Board of Directors for the District, consisting of seven members (henceforth five board directors will be elected and two appointed by the Board of Supervisors). The Board of Directors held its initial organizational meeting in February 2008. Efforts are currently underway to collect the requisite

signatures from District members to be presented to the Siskiyou County Superior Court to request transfer of watermaster responsibilities in the Scott and Shasta Valleys from DWR to the District (Krum, 2008). The minimum legal requirement for the Court to hold a hearing to initiate this change is approval by 15 percent of the "conduits" which in this case is synonymous with "diversions." As of June 2008 the District had obtained signatures from approximately 40 percent of the conduit holders. The District is continuing to collect signatures and it is anticipated that at some time in the near future they will present their request to the Court. The District is capable of fulfilling the watermastering requirements of the Shasta River Decree. This cumulative analysis conservatively assumes that individuals receiving watermaster service will be subject to an increase in cost for this service in the near future and that this could have implications for viability of agricultural operations.

Scott River Watershed-wide Permitting Program

CDFG and the Siskiyou Resource Conservation District (SQRCD) have developed a similar watershed-wide permitting program for the Scott River watershed, also in Siskiyou County. On March 29, 2005, SQRCD submitted an application to CDFG for a watershed-wide incidental take permit (ITP) pursuant to Fish and Game Code, § 2081(b) and (c). On April 22, 2005, SQRCD submitted a notification to CDFG pursuant to Fish and Game Code, § 1602. Thereafter, CDFG worked with the SQRCD and Agricultural Operators to develop the Scott River Watershed-wide Permitting Program (Scott River Program) including the ITP (ITP No. 2081-2005-027-01) and MOU and MLTC. Together, the ITP, MOU and MLTC, and individual sub-permits and SAAs comprise the Scott River Program. Similar to the Program for the Shasta River, under the Scott River Program SQRCD, DWR, and participating Agricultural Operators will conduct Covered Activities in accordance with the conditions in their SAAs to protect fish and wildlife resources, including coho salmon, and the avoidance, minimization, and mitigation measures specified in the ITP and sub-permits. During the first five years of the Program, the original term of any SAA CDFG issues under the Program will be five years. CDFG may extend the term one time for a period of up to five years if the SAA holder requests an extension prior to the SAA's expiration. All SAAs issued or extended after the first five years of the Program will expire on the expiration date of the ITP (i.e., the expiration date of the Program). The term of the ITP will be 10 years and all sub-permits will be written to expire on the expiration date of the ITP. The Scott River Program is currently undergoing CEQA review. The cumulative analysis conservatively assumes that the Program will be approved and that Covered Activities will be implemented according to the terms and conditions of the SAA MOU and MLTC and ITP throughout the entire Scott River watershed.

4.2 Cumulative Impacts and Mitigation Measures

Potential cumulative impacts of the Program on the resources described in Chapters 3.1 through 3.7 are described below. As explained in Section 4.1 above, the purpose of this analysis is to determine whether the impacts of the Program will be cumulatively considerable in combination with the potential impacts of past, present, and probable future government regulatory initiatives and similar past, present, and probable future activities similar to the activities the Program covers, including restoration activities, and their related impacts.

4.2.1 Land Use and Agriculture

The following analysis seeks to determine whether Impact 3.1.1 ("The Program could result in the conversion of agricultural land within the Shasta River watershed to non-agricultural uses") from Chapter 3.1, Land Use and Agriculture, which is found to be less than significant, could combine with impacts of other recent and related regulatory actions to cause a cumulatively considerable impact on land use, particularly whether these actions taken together would likely result in a conversion of agricultural land to non-agricultural uses.

Today, the resource-based economy of the Shasta River watershed is primarily ranching and farming. Historically mining, farming, ranching and logging were mainstays of the Shasta Valley and neighboring Scott Valley economy (Charnley et al., 2006). Mining diminished in the 1950s, with only small-scale operations continuing to occur in the neighboring Scott River watershed. In the 1970s, the downturn in the timber economy began and timber workers began leaving the local area (Charnley et al., 2006). Further declines in timber production on the Klamath and Shasta-Trinity National Forests, in the years immediately preceding the NWFP, dramatically affected the community's remaining timber workers. Most of the timber workers who still lived in the community chose to leave Siskiyou County with their families in the early 1990s.

Ranchers and farmers in the Shasta Valley community, whose families have been ranching and cultivating crops for generations, have also experienced economic stress over the last decade and have a difficult time maintaining their way of life. The pressures have many sides: fluctuations in beef, alfalfa, and hay prices in the face of rising labor costs and rising production costs; drought; and the increased cost, responsibility, and liability associated with complying with new environmental regulations imposed to protect endangered species and improve water quality. These regulations have modified land management practices on federal lands (including grazing allotments) and resulted in greater restrictions on activities within the bed, banks, and channel of streams. Each of these regulations has its own set of requirements and costs.

As noted in Section 4.1.4, Agricultural Operators who divert water according to the Shasta Decree (1932) are expected to experience an increased economic burden related to an expected increase in watermaster service cost. Agricultural Operators with riparian rights not subject to the decree, or who are otherwise currently not paying for watermaster service, who choose to participate in the Program, will be paying for costs of water use verification for the first time. Any water diverter who has riparian rights, or who currently is not watermastered, will be required to participate in a verification process for the use of water in accordance with a valid right. Whether this verification is done by the newly-formed District or in some other way, this would be a new cost for Agricultural Operators who do not currently receive watermaster service.

As identified in Impact 3.1-1, the cost to participate in the Program (including performing specific avoidance and minimization measures) could potentially reduce net income for participating Agricultural Operators. Future net income reductions could possibly undermine the financial viability of some existing agricultural operations. The cumulative impact of environmental regulations, watermaster fees, and Program-related fees may cause landowners of properties with less viable agricultural operations to feel increased pressure to convert or sell their

land. However, the cost and effort for those who choose to comply with Fish and Game Code, § 1600 *et seq.* and CESA outside the Program would likely be much greater than for Program participants. In some cases, this could result in conversion to non-agricultural uses, including attempts to subdivide agricultural land for rural residential or "ranchette" development.

The incremental impact on land use and agriculture from the Program, when combined with impacts from similar past, present, and probable future regulatory programs, will not be cumulatively considerable because the costs and effort associated with complying with these requirements individually, i.e., outside the Program, would likely be much greater than for Program participants; the net effect of the Program, compared to existing conditions, is considered beneficial. The Program would therefore not contribute to loss of economic viability of farming and ranching enterprises, and so would not cumulatively contribute to pressures to convert prime farmland, unique farmland, or farmland of statewide importance to non-agricultural uses, and would not be expected to cause new conflicts with existing zoning for agricultural use or Williamson Act contracts.

4.2.2 Geomorphology, Hydrology, and Water Quality

Short-term impacts to water quality, stream channel configuration, and stream flow are identified as significant impacts in Chapter 3.2, Geomorphology, Hydrology, and Water Quality (Impacts 3.2-1 and 3.2-3). These impacts are related to construction activities in and around the bed, banks, and channel of streams, and operation and maintenance of instream structures. While Impacts 3.2-1 and 3.2-3 can be reduced to less than significant with the mitigation measures identified in this report, some residual, short-term impacts would remain. These would include short-term (i.e., during construction and during the first winter after construction) increases in turbidity and sedimentation, short-term alteration of flows, and alterations to the configuration of stream channels. Overall, these residual, short-term impacts would be considered less than significant. Chapter 3.2 also identifies two less than significant impacts on hydrology and water quality: Impacts 3.2.2 (certain instream structures proposed to increase fish habitat as part of the Program would be installed within a flood hazard area and could impede or redirect flood flows) and 3.2.4 (the Program could result in an increase in the extraction of groundwater, which in turn could contribute to decreased baseflows and increased ambient water temperatures in the Shasta River and its tributaries).

As described above, there have been over 81 projects completed near and in the Shasta River, its tributaries, and other rivers and streams in the watershed over the past several years, with more projects currently being implemented or planned. Like construction and maintenance activities associated with the Program, other projects that involve heavy equipment at instream, riparian, or nearby upland locations have the potential to cause short-term increases in erosion, sedimentation, and/ or pollutant loading (i.e., fuels and lubricants, due to spills and accidents) to surface waterways. As a consequence, there can be minor, temporary impacts to water quality, fishery resources, and vegetation. While these projects typically include similar measures to reduce impacts to water quality and streamflow (e.g., through SAA conditions), they, too, may have short-term, residual impacts. Similar to the Program, the impact of these activities is not

likely to rise to a level of significance because the effects would not accumulate but rather would be site specific, short-term, and transitory in nature.

The incremental impacts on geomorphology, hydrology, and water quality from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable because:

- Specified terms and conditions contained in SAAs for these activities typically mitigate their impacts to less-than-significant levels;
- Residual impacts after mitigation, if any, tend to be short-term, site-specific and transitory in nature;
- Many instream projects, including many of the Covered Activities, aim to improve water quality and to restore channel structure; short-term impacts are therefore often mitigated by long-term gains;
- The Program (with mitigation measures identified in this Draft EIR) would improve water quality and contribute to restoration of a more natural hydrograph and channel morphology and function in the streams of the Shasta River watershed;
- Several other programs, particularly implementation of TMDLs in the watershed, the state and federal listing of coho salmon, the 5C Program, and the NWFP, also serve to protect and improve water quality and stream conditions. In sum, these programmatic and regulatory efforts, in combination with voluntary efforts on the part of individual landowners, SVRCD, the Shasta Valley CRMP, and others, are having, and will continue to have, a cumulative beneficial impact on water quality and hydrology; and
- Mitigation measures specified for Impacts 3.2-1 and 3.2-3 would reduce these impacts to the point that they would not make a considerable contribution to combined impacts of other past, present, and probable future similar or closely related projects.

Based on the above, where activities similar to those covered by the Program will result in impacts to geomorphology, hydrology, and water quality, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.2-1 and 3.2-3 are required.

4.2.3 Biological Resources: Fisheries and Aquatic Habitat

Impact 3.3-1 in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitat, identifies a significant impact of the Program associated with direct and indirect effects of instream and near-stream construction activities on coho salmon and other fish species and their habitat. Impacts could result from such actions as ground clearing, channel and bank excavation, backfilling, earthmoving, stockpiling and/or compaction, grading, and concrete work. These activities could result in the following impacts to coho salmon and CDFG fish species of special concern, which are described more fully in Impact 3.3-1:

- Short-term increases in sedimentation and turbidity;
- Accidental spills and use of hazardous materials;

- Direct injury or mortality resulting from equipment use and dewatering activities; and/or
- Temporary loss, alteration, or reduction of habitat.

As noted in the discussion of Impact 3.3-1, these effects are expected to be reduced to less than significant by complying with the terms and conditions of the SAAs, the ITP, and sub-permits issued under the Program. Chapter 3.3 also identifies one less than significant impact, Impact 3.3-2 (increased extraction of groundwater could contribute to decreased baseflows and increased ambient water temperatures in the Shasta River and its tributaries, thereby impacting coldwater fish habitat).

As described in Section 4.1.3 above, there have been over 81 projects near or in the Shasta River, its tributaries, and other rivers and streams in the watershed in recent years, and more are currently being implemented or planned. These have ranged from stream restoration projects, to emergency repair projects, to construction projects, among others. Most of these projects have the potential to cause impacts like those listed above that could adversely affect fish and aquatic habitat.

However, most of these projects will be subject to mitigation measures similar to those specified in the Program. Further, many of these projects are intended to improve habitat conditions for fish species, particularly coho salmon. These include terms and conditions in SAAs that place limits on season of construction, limits on equipment use, prohibitions against discharging wastes into the stream during construction, procedures to minimize damage from spills and upsets, and requirements for fish removal and exclusion and for erosion control.

The incremental impacts on fisheries and aquatic habitat from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable for the following reasons:

- Specified terms and conditions in SAAs and other permits required for projects of this kind usually mitigate impacts to less-than-significant levels;

- Residual impacts after mitigation tend to be short-term, site-specific, and transitory in nature;

- Many instream projects, including many of the Covered Activities, aim to improve fish habitat and passage, such that short-term impacts are mitigated by long-term gains in habitat quality and access;

- The Program (with mitigation measures identified in this Draft EIR) would reduce take of coho salmon in the Shasta River watershed, and would improve habitat (including increased access to and from spawning and rearing areas) for coho salmon and other anadromous fish; and

- Several other regulatory programs, plans and policies, particularly implementation of TMDLs in the Watershed, the state and federal listing of coho salmon, and the implementation of the NWFP, also serve to protect and improve stream habitat and to benefit coho salmon and other anadromous fish. In sum, these regulatory efforts, in combination with voluntary efforts on the part of individual landowners, SVRCD, the

Shasta Valley CRMP, and others, are having, and will continue to have, a cumulative beneficial impact on anadromous and other fish in the Shasta River watershed.

Based on the above, where activities similar to those covered by the Program will result in impacts on fisheries and aquatic habitat, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.3-1 are required.

4.2.4 Biological Resources: Botany, Wildlife, and Wetlands

Overall, the Program will provide additional protections to riparian and wetland plant and animal species and habitats. Several other regulatory programs identified in this Chapter, in addition to individual actions of private landowners, SVRCD, Shasta Valley CRMP, and others have increased protection for such resources, and have restored riparian and wetland areas. The overall impact of these new regulatory programs, combined with protection and restoration projects, is therefore beneficial for botany, wildlife, and wetland resources.

Impacts 3.4-1, 3.4-3, and 3.4-5 identify potentially significant impacts of Covered Activities on sensitive plant and animal species and habitats associated with construction activities and agricultural operations in and around streams and riparian areas. Impacts 3.4-2 and 3.4-4 identify additional impacts that are found to be less than significant. These impacts include effects such as the following:

- Direct mortality to special-status plant species from removal of individual special-status plant species or their seed banks;
- Special-status animals can be killed by vehicles and equipment, their burrows or other retreats may be crushed, or they may be killed if buried by new or maintained instream structures;
- Loss of downstream seasonal ponds due to flow modification; and/or
- Nest abandonment due to noise and human activity during construction periods.

Although disturbances are temporary and intermittent, movement of livestock and vehicles can mobilize silt and small gravel, decreasing habitat quality for aquatic species, destabilize streambeds and banks, inhibit the growth or reduce the vigor of riparian or instream vegetation. Impacts 3.4-1, 3.4-3, and 3.4-5 can, however, be mitigated to less than significant with the measures described in this Draft EIR. Projects and activities carried out under other programs identified in this Chapter could have impacts of a similar nature. Most of these projects and activities do, however, also include mitigation measures similar to those specified in the Program. These include terms and conditions in SAAs that place limits on season of construction, limits on equipment use, prohibitions against discharging wastes into the stream during construction, procedures to minimize damage from spills and upsets, and requirements for fish removal and exclusion and for erosion control.

The incremental impacts on botany, wildlife, and wetland resources from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable for the following reasons:

- Specified terms and conditions contained in SAAs are intended to mitigate biological resource impacts to less-than-significant levels;
- Habitat quality for fish includes a more robust and complex vegetation assemblage in and adjacent to the Shasta River, which in turn will support more riparian-dependent plants and animals; and
- Seasonal restrictions on equipment operations reduce direct effects on breeding birds and special-status species, if present. Pre-construction plant, and nesting bird surveys, and resulting activity restrictions will avoid impacts to these species.

Based on the above, where activities similar to those covered by the Program will result in impacts on botany, wildlife, and wetland resources, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.4-1, 3.4-3, and 3.4-5 are required.

4.2.5 Cultural Resources

Impacts 3.5-1, 3.5-2, and 3.5-3 in Chapter 3.5 identify potential impacts on cultural resources associated with construction and operation activities the Program covers; the first two are found to be significant, but can be mitigated; Impact 3.5-3 is found to be less than significant. The impacts are similar to potential impacts from similar past, present, and probable future projects. While both Covered Activities and similar projects could have potential impacts on known and unknown cultural resources, paleontological resources, and buried human remains, the standard mitigation measures specified for these impacts under the Program would mitigate them to less than significant.

The incremental impacts on cultural resources from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable for the following reasons:

- The impacts of the Program are mitigated to less than significant, as described in Chapter 3.5;
- The impacts of related projects would also be mitigated to less than significant, assuming incorporation of similar mitigation measures, which are standard for projects of this kind; and
- Impacts of this nature are usually site-specific, and do not tend to combine in a cumulative sense with impacts at other sites.

The regulatory programs discussed in this Chapter, including TMDLs, the NWFP, and the state and federal listing of coho salmon, bring a broader range of activities under increased regulatory

oversight. It is likely that as a result of these programs, more cultural resources would be identified and preserved or properly recorded.

Based on the above, where activities similar to those covered by the Program will result in impacts on cultural resources, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.5-1 and 3.5-2 required.

4.2.6 Hazards and Hazardous Materials

Impacts 3.6-1 and 3.6-2 in Chapter 3.6, Hazards and Hazardous Materials, identify the accidental discovery of hazardous materials and the risk of causing wildfires (e.g., from sparks from heavy equipment operating in areas with dry vegetation on the edge of forest land) as potential Program impacts.

The incremental hazard- and hazardous materials-related impacts from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable for the following reasons:

- Impacts of this nature tend to be site-specific and short-term, and do not tend to combine in a cumulative sense with impacts at other sites;
- The mitigation measures identified for Impacts 3.6-1 and 3.6-2 would mitigate these impacts to less than significant; and
- It is assumed that conditions placed on other related projects would similarly mitigate those impacts to less than significant, and to the degree that, when all cumulative activities are considered collectively, there would be no significant cumulative effect.

The regulatory programs described in this Chapter do not directly affect the regulation of hazardous materials. The NWFP does contain elements related to fuel management to reduce the risk of wildfire and damage caused by wildfire. Because the regulatory actions described in this Chapter bring a broader range of activities under increased regulatory oversight, including the necessity to incorporate basic safeguards into project planning and implementation, it is likely that risks associated with accidental discovery of unknown hazardous materials and the risk of wildfire will be reduced.

Based on the above, where activities similar to those covered by the Program will result in hazard- and hazardous materials-related impacts, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.6-1 and 3.6-2 are required.

4.2.7 Public Utilities, Service Systems and Energy

Impact 3.7-1 in Chapter 3.7, Public Utilities, Service Systems and Energy (the Program could result in the modification or expansion of existing water supply systems) is found to be less than

significant. Because such effects are local in nature, this less than significant impact is not expected to combine with impacts of other programs in a cumulatively considerable manner.

Impact 3.7-2, identifies the consequences of accidental contact with and damage to underground utilities and facilities during construction of projects covered under the Program as less than significant. Similar projects would have the potential for similar impacts.

The incremental impacts on public utilities, service systems, and energy from the activities the Program covers when combined with similar past, present, and probable future activities will not be cumulatively considerable for the following reasons:

- Effects of this kind are site-specific and do not combine with similar effects of related projects in a cumulative sense; and
- As discussed in Impact 3.7-2, Government Code, § 4216 requires notification of the Underground Service Administration between two and 14 days before any activity that could disturb underground utilities.

Impact 3.7-3 identifies a less than significant impact on energy consumption and air emissions related to increased use of pumps for water diversions. Other projects identified in this Chapter would not tend to increase energy consumption, so there is no potential for a cumulative impact on energy consumption. If FERC does not relicense the Klamath Hydroelectric Project, there will be a minor effect on energy supply in the region; however, it is anticipated that this effect can be compensated by existing power generation facilities and likely new generation, including natural-gas fired plants and renewable sources (FERC, 2007).[11]

Impact 3.7-4 identifies the contribution of the Program to global climate change due to emissions of greenhouse gases (GHG) as less than significant. This effect is in itself cumulative in nature, as all such emissions contribute to a build-up of these gases in the atmosphere. The combination of reduced carbon emissions and sequestration of carbon from the atmosphere is expected to outweigh new GHG emissions associated with Program activities, such that the overall effect of the Program on global climate change is expected to be beneficial. Implementation of Mitigation Measures 3.7-4a-b, either voluntarily or by another agency could further reduce GHG.

Based on the above, where activities similar to those covered by the Program will result in impacts on public services, utilities, and energy, those caused by the Program when combined with those impacts will not be cumulatively considerable. As a result, no mitigation measures beyond those specified for Impacts 3.7-1 through 3.7-4 are required.

[11] FERC (2007, Chapter 4) describes in detail the amount of power generation capacity that would be lost with decommissioning of the Klamath Hydroelectric Project dams, and also planned and potential new generation sources.

4.2.8 Other Issue Areas

Other issue areas normally considered in an EIR, such as Air Quality, Traffic and Transportation, Population and Housing, Mineral Resources, and Recreation, are not discussed in depth in this Draft EIR because CDFG determined in the Initial Study (see Appendix D) that the Program does not have the potential to cause a significant impact on these resources. Hence, even if other regulatory programs and activities similar to those covered by the Program were to have such impacts, where it was determined that the Program would have no impact, it would not contribute to them, or where it was determined that the Program's impacts would be less than significant, they would be so minor that when combined with the impacts of non-Program activities, they would not be cumulatively considerable.

4.3 Growth-Inducement

CEQA *Guidelines*, § 15126.2(d) requires that an EIR evaluate the growth-inducing impact of a proposed action. That section describes a growth-inducing impact as follows:

> The ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a water treatment plant might, for example, allow for more construction in service areas) . . . It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The environmental effects of the growth a proposed project could induce are considered secondary, or indirect, impacts. Secondary effects of growth can result in significant increased demand on community and public service infrastructures, increased traffic, noise, degradation of air and water quality, and the conversion of agricultural and open space land to urbanized uses.

On the basis of the definition above, assessing the growth inducement potential of the Program rests on the following question: would approval and implementation of the Program directly or indirectly support more economic or population growth or residential construction? The Program does not cover activities that involve construction of new homes, businesses, roads, or infrastructure. Therefore, it would not induce substantial population growth, either directly or indirectly. With respect to employment, the Program would not provide for or result in substantial, long-term employment opportunities. Program participants would be required to comply with specified avoidance, minimization, and mitigation measures in their SAAs, the ITP, and sub-permits when conducting an activity the Program covers. However, most of those activities are related to existing, routine agricultural activities or restoration projects. Some of those projects might require additional workers, but the work would be temporary in nature. Adding temporary workers would not induce substantial population growth, either directly or indirectly. Therefore, there would be no impact of this nature as a result of the Program.

4.4 Significant and Irreversible Environmental Changes

CEQA *Guidelines*, § 15126.2(c) states that impacts associated with a proposed project or program may be considered to be significant and irreversible if:

- The project would involve a commitment of non-renewable resources (such as fossil fuels).
- The primary and secondary impacts of a project would generally commit future generations to similar uses (such as a highway improvement that provides access to a previously inaccessible area).
- The project involves uses in which irreversible damage could result from potential environmental accidents associated with the project.

Activities implemented by Program participants would result in irretrievable and irreversible commitment of natural resources through direct consumption of fossil fuels during implementation of the Covered Activities and any related avoidance, minimization, and mitigation measures in the Program Area. However, such consumption would be minor, and therefore the irretrievable and irreversible commitment of natural resource it represents would not be significant.

Activities implemented by Program participants would not commit future generations to undesirable uses and would not involve a use from which irreversible damage could result. Although the activities the Program covers would in some case require the use of petroleum products and hazardous materials, it is unlikely that the amount used would result in an environmental accident or other damage so severe as to be irreversible. Also, as explained in Section 4.2.1 in this Chapter, the Program's incremental impacts in regard to land use conversion when combined with the potential impacts of similar activities would not be cumulatively considerable. Therefore, the Program would not cause a significant irreversible effect in regard to land use conversion.

References

California Forest Stewardship Program (CFSP), *The Five County Salmon Conservation Plan*, ceres.ca.gov/foreststeward/html/fivecounty.html, accessed February 8, 2007.

Charnley, Susan; Donoghue, Ellen M.; Stuart, Claudia; Dillingham, Candace; Buttolph, Lita P.; Kay, William; McLain, Rebecca J.; Moseley, Cassandra; Phillips, Richard H.; Tobe, Lisa, 2006, "Socioeconomic monitoring results, Volume III: rural communities and economies", In: Charnley, S., tech. coord. *Northwest Forest Plan—the first 10 years (1994–2003): Socioeconomic monitoring results*, Gen. Tech. Rep. PNW-GTR-649, Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Department of Fish and Game (CDFG) – See State of California.

Department of Water Resources (DWR) – See State of California.

Eastman, Darla, Contracting/Administration Supervisor, USFWS, telephone and email communications, June 9, 2008.

Federal Energy Regulatory Commission (FERC), *Final Environmental Impact Statement for Relicensing of the Klamath Hydroelectric Project No. 2082-027*, Issued November 16, 2007, www.ferc.gov/industries/hydropower/enviro/eis/2007/11-16-07.asp.

Federal Register – See U.S. Department of Commerce

Flickinger, Don, NMFS, NOAA Fisheries, email communication, February 8, 2007.

Flickinger, Don, NMFS, NOAA Fisheries, email communication, May 28, 2008.

Flosi, Gary, CDFG Fisheries Restoration Grant Program (FRGP) Manager, email communications on May 21st – 29th, 2008.

Garayalde, Adriane, District Administrator, Shasta Valley Resource Conservation District, email communication, May 28th and June 4th, 2008.

Five Counties Salmonid Conservation Program (5C Program), *5C Roads Maintenance Manual*, 2002, 5counties.org/Projects/FinalGeneralProjectPages/RoadsManual800.htm, accessed February 12, 2007.

Kaley, Karlyn Black, Ph.D., D.A.B.T., Staff Toxicologist, California Office of Environmental Health Hazard Assessment, Applied Risk Assessment Unit, Memo to Matt St. John, North Coast Regional Water Quality Control Board, re: Comments on the cyanobacterial/microcystin toxin summer 2005 water sampling results for the Copco/Irongate Reservoir. September 1, 2005. http://www.klamathwaterquality.com/documents/SWRCB_Toxic_Algae_Memo_9_1_05_PH_Spaces.pdf

Klamath Fishery Management Council (KFMC), official website, www.fws.gov/yreka/kfmc.htm, accessed June 4, 2008.

Klamath National Forest (KNF), 1995, *Record of Decision for the Final Environmental Impact Statement and Land and Resource Management Plan for the KNF*, USDA Forest Service, KNF, July, 1993.

Klamath Settlement Group, 2008, *Klamath Settlement Group Releases Proposed Klamath Basin Restoration Agreement for Public Review*, Press Release, January 15, 2008, www.edsheets.com/Klamathdocs.html.

Krum, Bill, Siskiyou Resource Conservation District, e-mail communication with Leah Katz, ESA, March 6, 2007.

Krum, Bill, Siskiyou Resource Conservation District, e-mail communication with Dan Sicular, ESA, June 12, 2008.

National Marine Fisheries Service (NMFS) – See U.S. Department of Commerce

Mahan, Leah, NMFS, NOAA Fisheries, telephone conversation, June 24, 2008.

Natural Resources Conservation Service (NRCS), 2007a, Environmental Quality Incentives Program, www.nrcs.usda.gov/PROGRAMS/EQIP/, accessed February 14, 2007.

NRCS, Conservation Reserve Program, 2007b, www.nrcs.usda.gov/programs/crp/, accessed February 14, 2007.

North Coast Regional Water Quality Control Board (NCRWQCB) – See State of California.

Pacific Fishery Management Council (PFMC), *Pacific Coast Salmon Plan: Fishery Management Plan for Commercial And Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California, (as Revised Through Amendment 14),* Portland: PFMC, March 1999, www.pcouncil.org/salmon/salfmp.html.

Pacific Fishery Management Council, official website, www.pcouncil.org, accessed June 13, 2007.

Patterson, James, NRCS, District Conservationist for Western Siskiyou County, email and telephone communications, February 6, 13 and 14, 2007.

Patterson, James, NRCS, District Conservationist for Western Siskiyou County, email and telephone communications, May 21, 2008.

Scott, David, CDFG Fisheries Restoration Grant Program (FRGP) Manager, email communications, January 21-29 and February 8, 9, and 14, 2007.

State of California, Department of Fish and Game (CDFG) (2004a), Press Release: *Fish and Game Commission Accepts Coho Salmon Recovery Strategy and Proceeds with Listing Coho Salmon*, February 5, 2004, www.dfg.ca.gov/news/news04/04016.html, accessed February 8, 2007.

State of California, CDFG (2004b) *September 2002 Klamath River Fish Kill: Final Analysis of Contributing Factors,* July 2004.

State of California, CDFG, Federal and State ESA Status for California anadromous fish as of April 20, 2006, www.dfg.ca.gov/nafwb/LISTSTAT.pdf, accessed February 9, 2007.

State of California, Department of Water Resources (DWR), Watermaster Services, www.nd.water.ca.gov/PPAs/Watermasters/, accessed February 13, 2007.

State of California, NCRWQCB, 2006a, *Water Quality Control Plan for the North Coast Region*. September, 2006, www.swrcb.ca.gov/northcoast/water_issues/programs/basin_plan/, accessed December 2006.

State of California, North Coast Regional Water Quality Control Board (NCRWQCB), 2006b, *Staff Report for the Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads*, June 28, 2006.

State of California, State Water Resources Control Board (SWRCB), 2002 Clean Water Act Section 303(d) List of Water Quality Limited Segments, final approval on 2003, www.swrcb.ca.gov/water_issues/programs/tmdl/303d_lists.shtml, accessed September 29, 2008.

State of California, San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), *Proposed Amendment to the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region to Improve Protection of Stream and Wetland Systems,* www.swrcb.ca.gov/northcoast/water_issues/programs/basin_plan, accessed July 12, 2007.

Sumner, Scott, Siskiyou County DPW, telephone communication, February 14, 2007.

Sumner, Scott, Siskiyou County DPW, telephone communication, May 21, 2008.

U.S. Department of Commerce, National Marine Fisheries Service (NMFS), Federal Register Notice Vol. 62, No. 87, 50 CFR Part 227, *Final Rule: Endangered and Threatened Species, Threatened Status for Southern Oregon/Northern California Coast ESU of Coho Salmon*, May 6, 1997.

U.S. Department of Commerce, NMFS, Federal Register Notice Vol. 62, No. 87, 50 CFR Parts 223 and 224, *Final Rule: Endangered and Threatened Species: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs*, June 28, 2005.

U.S. Department of Commerce, NMFS, *Magnuson-Stevens Reauthorization Act Klamath River Coho Salmon Recovery Plan*, Southwest Region, July 10, 2007.

U.S. Fish and Wildlife Service (USFWS), Klamath River Basin Conservation Area Restoration Program, *Working to Restore Anadromous Fisheries of the Klamath River Basin FY 2005 Annual Report*, 2006, www.fws.gov/yreka/Annual-Reports/FY-2005.pdf, accessed February 8, 2007.

USFWS-NMFS, Notice of Public Scoping and Intent to Prepare a Joint Environmental Impact Statement for Fruit Growers Supply Company's Multispecies Habitat Conservation Plan, Siskiyou County, California. Federal Register 73 (February 22, 2008); 9776-9777.